

In the Claims

1. (Currently amended) A system for fault-tolerant processing, comprising:  
a processor unit;  
computer instructions stored on a computer readable medium executable by the  
~~processor unit~~ and operable to:  
detect at least one of: failure of other processor units in the system, and  
connectivity failures that disrupt communications between the  
processor units;  
evaluate connectivity condition scores (CCSs) for the processor units,  
wherein the processor units are operable to communicate with  
each other via at least two communication paths, and the CCSs  
~~indicate connectivity errors experienced on each of the~~  
~~communication paths and~~ are based on weighted sums of  
connectivity errors experienced on the communication paths during  
an observation period;  
determine at least two candidate groups with the same number of at least  
a portion of the processor units to include in the system; and  
select between the at least two candidate groups based on the CCSs.
2. (Original) The system of Claim 1, wherein the processor units in each candidate  
group are capable of communicating with the other processor units in the candidate  
group.
3. (Currently amended) The system of Claim 1, wherein the severity of each  
connectivity error is factored into a ~~the~~ corresponding CCS.
4. (Currently amended) The system of Claim 1, wherein at least one of the CCSs is  
based on the history of connectivity errors on the corresponding communication path,  
and a decay factor is used to define how fast historic CCSs are decayed over an  
observation period.

5. (Currently amended) The system of Claim 1, further comprising:  
computer instructions stored on a computer readable medium executable by the  
~~processor unit~~ and operable to:  
unpack a bit mask of normalized CCSs from each processor unit.
6. (Currently amended) The system of Claim 1, further comprising:  
computer instructions stored on a computer readable medium executable by the  
~~processor unit~~ and operable to:  
form a bi-directional CCS for each processor unit based on normalized  
CCSs; and  
select between the two candidate groups to include in the system based  
on the bi-directional CCSs for the processor units in each  
candidate group.
7. (Currently amended) A system for fault-tolerant processing, comprising:  
a processor unit configurable to communicate with other components in the  
system via at least two switching fabrics; and computer instructions  
stored on a computer readable medium executable by the processor unit  
and operable to:  
maintain a connectivity condition score (CCS) for each communication  
path along the at least two fabrics based on connectivity errors  
experienced on the path, wherein the number of connectivity errors  
during previous observation time periods are factored into a  
corresponding CCS during an observation time period and the  
CCSs are utilized to determine whether the processor unit will  
continue to be included in the system.
8. (Original) The system of Claim 7, wherein the severity of each connectivity error is  
factored into the corresponding CCS.

9. (Canceled)

10. (Original) The system of Claim 7, wherein the processor unit is further configured to communicate the CCSs to at least one of the other components in the system.

11. (Original) The system of Claim 7, further comprising:

computer instructions stored on a computer readable medium ~~executable by the processor unit~~ and operable to:  
summarize each set of CCSs into a single score.

12. (Original) The system of Claim 11, further comprising:

computer instructions stored on a computer readable medium ~~executable by the processor unit~~ and operable to:  
normalize each set of CCSs based on the single score.

13. (Currently amended) The system of Claim 7, further comprising:

computer instructions stored on a computer readable medium ~~executable by the processor unit~~ and operable to:  
transform ~~the~~ normalized CCSs into a condensed format.

14. (Currently amended) A computer product, comprising:

data structures stored on a computer readable medium including:

a connectivity condition score (CCS) for each communication path  
associated with a processor unit in a distributed processing  
system, wherein the CCS indicates the connectivity condition of  
the communication path during at least one observation period;  
and

a connectivity matrix indicating whether the processor unit is able to  
communicate with other components in the system through any of  
the communication paths; and  
a single score representing the sum of the CCSs for the processor unit.

15. (Canceled)
16. (Original) The computer product of Claim 14, wherein each CCS is normalized and stored in a bit mask.
17. (Currently amended) A method for regrouping processor units in a fault-tolerant system, comprising:
- determining the ability of each processor unit to communicate with other processor units in the system;
  - forming at least two candidate groups with the same number of processor units that are able to communicate with each other; and
  - evaluating connectivity condition scores (CCSs) for each candidate group of the processor units, wherein each CCS indicates the connectivity condition of one communication path associated with a the corresponding processor unit.
18. (Original) The method of Claim 17, wherein the CCS is based on the number of connectivity errors experienced by the corresponding communication path.
19. (Currently amended) The method of Claim 17, wherein at least one of the CCSs is based on ~~the history of~~ historical connectivity errors experienced by the corresponding communication path.
20. (Original) The method of Claim 18, wherein the severity of each connectivity error is factored into the corresponding CCS.

21. (Original) The method of Claim 18, further comprising:  
forming a bi-directional CCS for each processor unit; and  
selecting between the at least two candidate groups to include in the system  
based on the sum of the bi-directional CCSs for the processor units in  
each group.
22. (Original) The method of Claim 21, further comprising:  
selecting an arbitrary one of the at least two candidate groups when the  
candidate groups have the same sum of bi-directional CCSs.
23. (Currently amended) An apparatus for regrouping processor units in a fault-  
tolerant system, comprising:  
means for forming at least two candidate groups of processor units that are able  
to communicate with each other; and  
means for evaluating connectivity condition scores (CCSs) for each candidate  
group of the processor units, wherein the number of connectivity errors  
during previous observation time periods are factored into a  
corresponding CCS during an observation time period and each CCS  
indicates the severity of connectivity errors experienced by one  
communication path associated with a the corresponding processor unit;  
and  
means for selecting one of the at least two candidate groups based on the  
CCSs.
24. (Original) The apparatus of Claim 23, further comprising means for counting the  
number of connectivity errors experienced by a the corresponding communication path  
during an observation period.
25. (Original) The apparatus of Claim 23, further comprising means for factoring into  
the CCS connectivity errors experienced by the corresponding communication path  
during at least one previous observation period.

26. (Original) The apparatus of Claim 23, further comprising means for selecting a candidate group based on the survival priority of the processor units included in each candidate group.

27. (Currently amended) The apparatus of Claim 26, further comprising means for selecting a candidate group based on the CCSs, when both candidate groups have the highest number of at least one of the group consisting of: processor units and/or processor units with the highest survival priority.